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ABSTRACT

This practicum was developed in response to a concern that a week-long orientation program did not eliminate the difficulties experienced by sixth graders in signing onto and using the school's Local Area Network (LAN). Class printouts demonstrated a noticeable discrepancy between the number of skills students were supposed to complete and the actual number completed. To remedy this situation, a computer program was developed to introduce practicum participants to networking; to explain the signing on process in a clear concise way; and to demonstrate the proper use of the computer control keys needed to successfully use the networking software. Results showed marked improvement in the use of the LAN by practicum participants. This tutorial is now recognized as an integral part in the implementation of the school's networking program. Appendices include a pre/post test, charts of student progress made, a glossary, an annotated bibliography of 10 items, and a computer printout of the program comlement. (DB)

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DEVELOPMENT OF A COMPUTER PROGRAM TO IMPROVE SIXTH GRADERS USE OF A LOCAL AREA NETWORK

by

SHIRLEY S. CASTOLDI

A Practicum Report
submitted to the Faculty of the Center for the
Advancement of Education at Nova University in
partial fulfillment of the requirements for the
degree of Educational Specialist

May/1988

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ABSTRACT

Development of a Computer Program to Improve Sixth Graders Use of a Local Area Network
Castoldi, Shirley S., 1988: Practicum Proposal, Nova University, Center for the Advancement of Education.
Descriptors: Networks/ Local Area Networks/ Computer Networks/ Computer Uses in Education/ Computer Software/ Computer Oriented Programs/ Computer Literacy/ Program Development/ Program Implementation/ Middle Schools

This practicum was developed in response to a concern that a week-long Orientation Program did not eliminate the difficulties experienced by sixth graders "signing-on" the school's Local Area Network. Class printouts demonstrated a noticeable discrepancy between the number of skills students were programmed to complete and the actual number completed. To remedy this situation, a computer program was developed to introduce practicum participants to networking; to explain the "signing-on" process in a clear, concise way; and to demonstrate the proper use of the computer control keys needed to successfully use the networking software. Results showed marked improvement in the use of the LAN by those students who viewed the program complement. This tutorial is now recognized as an integral part in the implementation of the school's networking program. Appendices include a Pre/Post Test, charts to demonstrate progress made, glossary, and computer printout of the program complement.

AUTHORSHIP STATEMENT

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my work, presented here, will earn similar respect.

Signed: Shirley S Castoldi

APPENDIX F

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Practicum Title DEVELOPMENT OF A COMPUTER PROGRAM TO IMPROVE SIXTH GRADERS USE OF A LOCAL AREA NETWORK

Student's Name SHIRLEY S. CASTOLDI

Program Site CORAL SPRINGS MIDDLE Date JUNE 13, 1988

Observer's Name MR. ARTHUR HEALEY Arthur S. Healey 6/21/88
(please print---------and sign)

Observer's position PRINCIPAL Phone # (805) 257-5314

Observer's comment on impact of the project (handwritten):

The use of this software program will make a significant contribution to the best implementation of our new networking program; as a result, it should have long-term effects on our use of computers for better instruction.

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CHAPTER ONE

PURPOSE

Background

The academic setting for this practicum was a public middle school located in an affluent community of South Florida. Enrollment figures for 1987 had reached 1,500 with 410 students in grades six, 461 in grade seven, and 629 in grade eight. The student body was comprised of approximately 84 percent White, 10 percent Black, 3 percent Spanish-American, 2 percent Chinese/Japanese-American, and .1 percent Native American. Due to overcrowded conditions, the sixth graders were housed in 12 portable classrooms with access to the main building for enrichment subjects. The population is somewhat transient with as many as 30 students entering or transferring during any nine-week period.

In statewide testing, this school has always ranked among the top three in performance from a list of twenty-six middle schools in the county. Grade equivalent scores have been one to two years above the average

score designated for a particular grade level. Much of the student success can be attributed to parental interest and involvement in the educational process at the school. During the 1986-87 academic year as many as two-thirds of the parents had attended at least one school function or meeting based on attendance records.

In addition to the Basic Educational Programs, there are Exceptional Programs for the physically handicapped, the specific learning disabled, and the gifted. Also, three interdisciplinary teams were created at the sixth grade level for a second consecutive year. These particular students were taught in blocks of time that allowed for team teaching units based on topics that "cut across" subject matter lines.

This practicum teacher has had 25 years of teaching experience at the elementary, middle, and high school levels. The most recent assignment was as a team teacher in the sixth grade when the concept of team teaching was first introduced at the county level. However, this past year was spent supervising the school's newly installed Local Area Network (LAN) as a volunteer.

The LAN came about as the direct result of a thorough administrative study in expanding the services of an already existing mini-lab. This lab was being used by 15 sixth graders each period in the remediation of minimum basic skills. Also, a neighboring middle school had three years of documented success in improving students' academic skills through the use of a network.

After careful and extensive evaluation of several network systems and network software, the principal purchased DigiCard Network hardware and software from Ideal Learning Inc. The project was funded through the school budget as well as monies raised through the Parent/Teacher Association. The network was installed in a former typing classroom. A combination of Apple II and Apple IIe computers, 30 in number, along with one Okidata printer were moved from various parts of the building to the new network lab.

Prior to opening the networking lab, the administration decided to initially limit the use of the LAN to the sixth grade teams until any and all unanticipated problems with this system were resolved. Fifteen homogeneously grouped classes visited the lab twice a

week for 30 minutes. Although many subjects were available in the network software package, use of the system was restricted to Computer Assisted Instruction (CAI) in English. The assigned lessons provided an opportunity for practice and mastery of Minimum Basic Skills as outlined in the county's sixth grade curriculum guide.

English teachers were required to make lab assignments on the skills most recently taught in class. In turn, these assignments were logged-in the system by the lab volunteers. When the students signed-on to the network, they were programmed to complete a series of objectives, usually three lessons in one objective. Since the MBS were available at various reading levels (grades 3 - 6), the teachers were able to further individualize instruction based on a student's needs. Printouts were provided for teachers at the end of each session documenting each student's progress.

Ideally, the LAN was viewed as a tool which enabled teachers to spend more class time on instruction, individualize through careful selection of CAI, and reduce paperwork required in verifying mastery of skills. Unfortunately, progress was markedly slow

because a significant number of students were experiencing difficulty signing-on to the system even after an entry level orientation period of one week. A lessor problem but still a concern was the students' confusion over the use of command keys. These concerns as well as the students' lack of experience with networking led to the topic of this practicum.

It should be noted that since there was extensive use of Networking terminology throughout the practicum paper, a glossary has been provided. (see Appendix F) Referenced terms are designated with an asterisk (*) the first time they appear in the subsequent text.

Problem Statement

The field of computers is changing "exponentially" and future trends in telecommunications* will be linked to networking.* Local Area Networks* have been noticeably visible in the business world and the public sees this phenomenon in television commercials and newspaper ads. Only recently has this LAN* technology been applied to personal computers. This new revolution has had a tremendous effect on Computer Education in the nation's schools. Several states, individual counties, and the middle school in this study have made the LAN an integral part of their long and short range goals and computing plans. This move has allowed the wise use of computer equipment, teacher instructional time, and budgeted money to ultimately enhance student education. This middle school's network supports 30 microcomputers enabling pupils to share a housed hard drive* unit and one or more printers. The academic benefits of such technology is already applauded in this district which presently boasts of three other middle schools which are using LAN's in addition to two more that are using network systems on a trial basis. Corvus, DigiCard, Apple ESE, and IBM ESE are among the varied systems

being used.

Despite the propounded benefits of networking and a week-long student orientation, the practicum teacher observed individuals using the entire lab period trying to "sign-on"* the network system with little or no success. Even the classroom teachers began commenting on this problem. This difficulty sometimes affected as many as one-third of a 17 to 30 member-class. To sign-on, students had to type their last name and first name separated with a comma. Next, they entered their four digit student number. Each student was given a card upon entering the lab with the above information to make the signing-on process simpler. Even this help procedure did not entirely eliminate the problem.

The lab volunteers and the teachers would respond to raised hands and notice "Invalid Entry" printed on the computer screens. In watching these pupils sign-on again, the following common mistakes were noticed: nicknames used in place of the formal names that appeared on the lab information cards, first names were typed followed by last names, commas were omitted between the last and first names, or the digits in the student ID numbers were reversed. Knowledge of these

errors did help but there were still individuals who continued to experience difficulty as well as newly enrolled students who were not familiar with the process.

Continued observation led to the identification of still another obstacle to be overcome in the successful operation of the LAN. Even though the sixth graders had the benefit of a nine-week Computer Literacy Course prior to using the networking system, they were not always proficient in the use of the control keys.* For example, every time the students noticed an asterisk in the lower right-hand corner of the screen they were to press the Return key.* Some would wait too long while others would press the Spacebar. They appeared to forget what to do. Occasionally, the Escape key* was accidentally pressed. This action would automatically return the student to the beginning sign-on screen and the accumulated responses and/or scores would be lost. The directionality of the Arrow keys* was confusing for certain pupils who normally experienced difficulty with the concepts of right and left, up and down.

Another area of concern was the students' "impatience" with the system. When the Return key was

pressed on the LAN, the hard drive, acting as a "traffic cop," communicated with each computer in the order in which this control key was used. Sometimes the wait could be a few seconds to as much as one minute. Forgetting the ten to fifteen minutes used in a typical computer lab to distribute and collect floppy disks,* students would press the Return key repeatedly placing added stress on the system, slowing it down even more.

The daily network printouts* confirmed the fact that there was a serious set of problems to be remedied. The printouts listed each student, documented the number of objectives* attempted, the number of objectives passed, and the scores achieved. (see Appendix A) Perusal of the network printouts generated some concerns for the teachers and lab managers as to why certain students were mastering an average of two objectives per lab session while others were credited with one objective or possibly none. (see Appendix B) The instructors attributed the poor performance to one or a combination of reasons. These were the failure of the students to read, comprehend, and follow directions; the need for additional instruction in specific skills; or the problems the students were having with the system's

software.* Even though each of these perceived causes are of equal importance, the intent of this practicum is to improve the students' general understanding of the LAN and to speed up the process of "signing-on" the network so as to increase time on task.

The following Objectives were established to determine the effectiveness of this study:

1. Time on task by users would increase from 15 minutes to 25 minutes of a 30-minute class period by reducing the "sign-on" time to a maximum of four minutes. (McDermott, 1985) This would be documented through careful observations of the practicum teacher.

2. Mastery of Minimum Basic Skills would increase from a ratio of (0-1) objectives to a ratio of (2-3). Individual class printouts would verify the number of objectives completed.

3. Reduction in the number of students experiencing network operational problems to one-tenth of the class count. This would be documented through careful observations of the practicum teacher.

4. Students would score at least an 80 percent on a Posttest dealing with understanding and effective use of the Local Area Network.

CHAPTER 2

RESEARCH AND SOLUTION STRATEGY

Alaska is a leader in the application of educational technology. In the 1970's Alaska's State Department of Education began investing large amounts of money in a statewide networking system to address its number one problem --- communication. Today, the 49th State has overcome geographic isolation, four time zones, and severe weather conditions to educate its residents. It boasts of an electronic mail system* which interconnects its Department of Education with 52 local school districts, a computerized "Alaska Knowledge Base" containing information about a variety of educational resources, as well as a microcomputer-based method of instruction for high school students. (Alaska State Department of Education, 1982)

Alaska's networking system was not without its problems. One of its weakest links was its failure to encourage direct teacher involvement in designing programs for classroom use. Another was a need to

address its priority programming areas which included native culture, bilingual news programs, and on-going teacher in-service training. Nevertheless, awareness of these problem areas did lead to subsequent improvements in the overall system.

Like Alaska, each state or local school board must access its needs before investing in this technology. Dr. Cecil McDermott, director of Arkansas's Project IMPAC (Instructional Microcomputers Project for Arkansas Classrooms), with over 90 networked lab sites, believes in using the labs as tools. McDermott does not advocate networking for networking's sake. (McCarthy, 1988)

During the years 1983-85 IMPAC under the supervision of the Arkansas Commission on Microcomputer Instruction conducted a comprehensive study to determine how basic skill achievement could be affected through technology. Some of the more significant recommendations as related to this practicum were:

1. Required computer literacy instruction in grades three through eight is the least effective way to use computers in the school. Focus should be in teaching with computers which is cost effective and

provides the opportunity for basic skills, creative writing, problem solving, and enrichment activities as a supplement to education.

2. Recommended courseware should be recognized by at least two of five nationally known evaluation groups such as the Minnesota State Department of Education and Educational Products Information Exchange (EPIE).

3. Software should correlate with 60 percent of the state's Basic Skills List.

4. Teachers in grades four through eight should be given priority in the use of CAI* covering basic skills.

5. Extensive and on-going In-service training for teachers should be required. (McDermott, 1985)

There are several issues in the study just mentioned which frequently appear in the literature. One is the concern over the appropriate selection of software. Corvus National Educational End-Users Group (CNEEUG, 1984) has undertaken the task of testing software for network compatibility for two reasons: to provide its members with a list of networkable software and to provide publishers with results, information or feedback on their products.

Although there is an abundance of high-quality

educational software, the problem has been that this software is not always available for networks (Casabonne, 1984). Part of the problem is copyright infringement. A copy-protected program cannot be stored on the network's hard disk.* Companies which are committed to education are adapting their software to network use through licensing agreements.

The software needed to run a network is unique. The system software that comes with the network creates the medium for using the software stored in the fileserver* or hard disk. It allows the registered user* to share CAI programs, hard disk space and printers. Next, the curriculum management software* which is built around preexiting CAI programs actually manages the delivery of the lessons according to a sequence. It also keeps track of student performance and records.* Networkable programs cannot be added to the curriculum management system by its user, this is handled by the developer of the system (Brawer, 1988).

Two of the more familiar names in networking software are Computer Network Specialists (CNS) and Ideal Learning Inc. They can provide all the necessary network software, follow-up, and teacher training.

Trudy Jermanovich (Jermanovich, 1988), a middle school teacher who is familiar with both products, stated that a number of her students encountered difficulty signing-on the network with the Ideal Integrated Learning System. However, through continuous use of the system the students became more proficient at this task. The following year however, the remedial students began using the CNS software which Miss Jermanovich rated as more "user friendly."*

Abraham Peled (Peled, 1987) also voiced a concern about obtaining the right software as fast as improved computers are being built. While progress has been made in the ability to produce network software, it is dwarfed by the unprecedented rate of advancement in hardware* and the possibility resulting from this progress. The actual writing of software is challenging because it involves specifying the solution to a problem in sufficient detail to enable a computer to execute it. Added to this complexity is the fact that software changes continually as it is updated and adapted.

For example, Dr. Armand Sequin of the University of Alaska Southeast at Juneau (Sequin, 1988), cites a situation where a shell (menu) was created to facilitate

the use of mainframe computers because the "language" was not considered user friendly. This change protected the occasional user from what Sequin labelled as "mainframe shock."

Solution Strategy

Despite the fact that research on LAN's in education is only now becoming a focal point of interest, there is still sufficient data to formulate a strategy for this practicum. Educators experienced in the use of networks concur that one of the most crucial decisions in establishing a Local Area Network is the careful selection of software. Even the best software packages may require some revisions or adaptations as in the case of the University of Alaska (Sequin, 1988). This dilemma is actually an opportunity for educators to use their imaginations to experiment with new ideas in making existing software effective as well as "user friendly."

Therefore, the strategy of this practicum is to create a software program complement which will make the existing network software easier for students to use. The program will consist of three parts: an introduction to the concept of networking; a clear but concise

explanation of how to "sign-on" the system (examples given); and emphasis on the proper use of the control keys. After viewing this software, the students should be able to "sign-on" the system with little or no difficulty thus increasing the time they have to work on the Computer Assisted Instructional lessons. In turn, more time on task should increase the number of objectives covered during a 30-minute lab period. Also, the information acquired through viewing the software should enable students to successfully pass a posttest (80 percent) on the use and understanding of the Local Area Network.

CHAPTER 3

METHODOLOGY

Information Gathering

The first phase of implementation involved the gathering of data. Network printouts of students' progress listing the objectives mastered were collected on a daily basis regardless of the academic levels of the classes. A careful analysis was made of the number of objectives each sixth grade student attempted as well as the number passed. Notations were made when poor performance was attributed to difficulties when entering and using the system and its software. In addition to the printouts, daily observations of any student's difficulties with the LAN were carefully documented. Those problems specifically related to subject area were directed to the teachers for their scrutiny.

While this background information was being collected, the practicum teacher visited two other South Florida middle schools with operational LAN's. These schools were located in heavily populated urban areas

where the socioeconomic factors were less favorable than the school in this study. The network managers* at both sites concurred that their students encountered similar difficulties when the subject was brought up for discussion. Their cure for the problem was simply time and practice. Based on their experience, it took from one to three months of frequent lab visits to eliminate the technical problems. The drawback with this approach was that some students learned to dislike the lab if they failed to show progress, not because they had not mastered the basic skills but because they could not use the equipment properly to substantiate this mastery.

Software Development

After three weeks of documenting information, it was apparent that the operational problems experienced by students could be narrowed down to difficulty in "logging-on"* the system as well as confusion over the use of control keys. This knowledge became the content matter for the entry-level software. A simplified tutorial script was developed in which an insect-like character by the name of "Network Ned" introduced the students to networking, demonstrated how to sign-on the system, and explained the use of the control keys.

Once the script was written and evaluated by the English teachers involved with the network lab, the decision was finally made to utilize Apple Logo Programming. This high-level computer language provided the programmer with graphic features that helped to create attractive, colorful screens. Mrs. Jan Strickland, an experienced instructor of Logo at the university-level, was consulted several times during a six week period for her expertise in evaluating this software program prior to its presentation.

Use of Software

The target group of 55 students participating in this study was randomly drawn from five sixth grade English classes representing the following designations: advanced (14 students), average (12 students), low average (15 students), remedial (8 students), and specific learning disabilities (6 students). The purpose of the lab session was explained to each group prior to their coming to the lab in order to put the students at ease and also to conserve on time. Once in the lab, each student was given a pretest (see Appendix C) consisting of ten multiple-choice questions on the content to be covered in the software. Instructions

were given to read and answer as many questions as possible. Only the remedial and specific learning disabilities classes had the test questions read aloud to them.

After the pretest was handed in, the students moved to the computer stations to view the tutorial entitled "Welcome to CSMS Network." During the viewing, the practicum teacher was careful to observe and record the students' comments as well as their reactions. The software took approximately fifteen minutes to view, depending on the student's individual reading speed. Afterwards a posttest (see Appendix C) utilizing the same ten multiple-choice questions was given. It was anticipated that the information taught would enable the pupils to score 80 percent or better on the posttest.

Next, the students proceeded to sign-on the network to complete three objectives on varied levels dealing with subject pronouns. The schedule was designed so that each student would have 30 minutes on the system. Again, careful notes were made of any technical problems.

At the conclusion of the period, a printout was obtained of the progress of each class. The total

number of objectives was counted and compared to printouts collected prior to viewing the software. It was understood that if the number of skills passed increased and the operational problems were greatly reduced, this could in a large part be attributed to the information provided by the tutorial program.

Difficulties

There were a couple of major difficulties associated with the successful implementation of this practicum. The first obstacle encountered was the necessity of obtaining a network version of Apple Logo in order to run the practicum software on the system. Logo Comp Systems, Inc. of Boston, Massachusetts was contacted by telephone. The company's representative suggested that LOGOWRITER, a network version of the programming, be used to achieve the desired results. Upon purchasing the package the school would be issued a site licensing agreement.* The price of $450 precluded the purchase of this additional network software by the principal due to the large amount of money already invested in the present system.

To circumvent this situation, the school's individual Apple Logo Packages numbering fifteen were

utilized. This meant that half of the computers in the network lab had to be taken off-line* so that Apple Logo could be loaded on the individual computers. Once the Logo was in memory, the implementation software could easily be run without violating any copyright laws. This setup limited the number of students to 15 per class rather than the usual 30. After the software was viewed, the students had to move to computers in the lab which were still on-line* in order to access* the network's software.

Another difficulty was the fact that the implementation had to take place during the last full week of school. This situation could not be avoided because of a delay due to the problem with the software as well as the preplanned activities on the school calendar. It was a challenge motivating students to do their best when their thoughts were fixed on summer vacation. The classroom teachers greatly assisted in this matter by impressing the students with the importance of their role in this research and how the results would affect the future use of the school's network.

CHAPTER 4

RESULTS

The overall results of this study clearly demonstrated that the effectiveness of the practicum software was twofold. Not only did the students show that they mastered the general knowledge of operating the network but also that this mastery led to improved use of the system as well as improved performance in completing lessons assigned on the network software. The evaluation of the outcome objectives took on several forms: teacher observations, comparison of pretest and posttest scores, comparison of specific network printouts of total objectives completed and passed, and voluntary student comments.

The first outcome objective dealt with increasing the time on the system to 25 minutes of a 30-minute period while reducing the sign-on time. This goal had to be measured solely through the practicum teacher's observations. As each student entered the system notice was made of the number of minutes required to sign-on.

Upon observation, a conclusion was reached that all 55 students (100 percent) in the study managed this task in less than three minutes. While some of the success is due to the practice effect resulting from intermittent use of the lab for three months, it should be noted that on no other occasion was this time frame met until the implementation of the practicum software.

The second objective aimed at increasing the mastery of skills from a ratio of (0-1) skills to a ratio of (2-3) skills. It was assumed that if the students could effectively operate the system and have a 25 minute lab period, then they would have a better chance of completing more lessons on the network. The measurement tool used to evaluate the success of this objective was the network printout from every class. Tabulation of the objectives passed showed some astonishing results. (see Appendix D) In the target population 25.5 percent of the students completed one objective or skill while 74.5 percent completed (2-3) objectives. A review of earlier printouts (see Appendix B) revealed that prior to the study not one student was credited with completing three objectives during the lab session. Again, the practice effect cannot be ruled out

entirely; nevertheless, the noticeable improvement in the student performance can be linked to favorable effects of the software equipment.

Objective three called for a reduction in network operational problems to one-tenth of the class count. Like objective one, this evaluation was based on the practicum teacher's observations. Only one student in the target group encountered a problem. He accidentally pressed the return key (enter key) while the lesson menu* was on the computer screen. This action took him into a "help" screen* which further explained the selections in the menu. He raised his hand for assistance. The practicum teacher simply asked the student, "According to the software lesson, what do you do in order to go from the "help" screen back to the menu?" The student thought for a moment and responded, "Oh! I press the control key and the letter 'z'!"

It should be noted here that twelve students questioned why a few of their answers on the subject pronoun lessons were wrong. When the practicum teacher looked at their screens to evaluate the problem, it was clear that these students forgot to capitalize the subject pronoun when it appeared at the beginning of a

sentence. Awareness of this mistake solved the problem. An assumption can be made that this difficulty could be related to an academic problem rather than an operational one.

The fourth and final objective focused on the pupils achieving at least 80 percent or better on the posttest dealing with understanding and effective use of the LAN. (see Appendix E) The tabulated results of the posttest shows that 76 percent (42 students) of the target group scored 80 percent and above while 24 percent (13 students) scored below 80 percent. While these percentages do not reflect the proposed or expected mastery for all sixth grade participants, it does demonstrate that more than half of the students scored as predicted or higher after viewing the software.

The participants were asked to voluntarily evaluate the software and make any suggestions they felt could improve the software equipment. They were further instructed not to sign their names to the comment sheets. Thirty-seven students responded to the request. The majority of the comments were very complimentary: "I liked it." "It was fun." "I learned

alot." "It'll help other students, especially new ones." There were two students who said the software was boring and took too long to view. One individual suggested that one of the graphics which appeared twice in the presentation but with different colors and script be replaced with an entirely new graphic screen. The overall comments of the students further demonstrated that the goal of the practicum had been accomplished.

CHAPTER 5

RECOMMENDATIONS

This project provided a rare opportunity to improve upon student learning in the effective use of a Local Area Network. It proved that educators can be innovators in the new and exciting educational frontier of networking. The results as outlined in Chapter four of this practicum showed significant gains in those areas the researcher hoped to change and/or improve. Based on the documented success of this study, the author makes the following recommendations:

1. The software program should become an integral part of the school's LAN Orientation Program for middle school students and teachers alike.

2. The software program as well as the results of this study should be shared with area faculties contemplating the installation of a LAN.

3. The software complement should be updated as changes in the use of the LAN and its software occur.

4. The software should be shown to consultants

when possible to demonstrate the need for companies to write "user friendly" programs for networks.

5. The software should serve as a model in developing a Spanish version to assist bilingual students in the county who are presently using LAN's with similar networking software.

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Brawer, Jennifer. "A+ Teachers' Toolbox," A+. May 1988, pp. 65-70.

This article familiarizes the reader with the hardware needed to equip a Local Area Network in an educational setting. The author further describes the characteristics of the Curriculum-Management Software and System-Management Software needed to make the lab operational.

Casabonne, Richard. "Adapting Educational Software For Networks," The Educational Networker. Spring 1984, pp. 44-46.

The author highlights the expansion of computer networks in educational institutions. Reference is made to the lack of quality networking software available due to the manufacturers' concerns of copy-protecting their products.

Peled, Abraham. "The Next Computer Revolution," Scientific American. October 1987, pp. 56-64.

The author presents future trends in technology that will make a profound change in society's relation to computer networks. Despite the advances in computer

hardware, there is still a dire need for high-level languages which make it possible for software to realize the potential of advanced computerized systems.

Sequin, Dr. Armand. "Networking Educators Across the Expanses of Alaska," Technological Horizons in Education Journal. April 1988, pp. 81-84.

This article outlines how the state of Alaska solved its communication problem through the establishment of a statewide computer system, University of Alaska Computer Network (UACN). Educators on all levels and from various geographical areas are electronically linked through the system. Difficulties with compatibility of equipment and software are thoroughly discussed.

Computer Program

Alaska State Department of Education. "Volume III: Alaska Knowledge base System," Educational Telecommunications for Alaska. ERIC ED 217892.

This document details the research and implementation conducted by the Alaska State Department of Education in the development of a Knowledge Database System. Users needs and specifications were of paramount importance in the development of the software.

Computer Software

CNEEUG. "Software Compatibility Testing," The Educational Networker. Fall 1984, p. 17.

This article discusses the detailed procedures used by CNEEUG in testing software for network compatibility. Once data is collected, it is made available not only to members but also to the publishers of the software.

Computer Uses in Education

McDermott, Dr. Cecil W. Affecting Basic Skills Achievement Through Technology. Arkansas: State Department of Education, 1985.

This research report was conducted in order to develop an "instructional model" that combines regular classroom instruction with networking. A six year plan for the implementation of technology related programs using microcomputers was instituted by administrators.

Local Area Networks

Jermanovich, Trudy. Telephone interview. 20 May 1988.

This interview brought into focus commom problems experienced by all lab managers in the successful operation of a school network. The need for "user friendly" networking software was extensively discussed.

McCarthy, Robert. "The Network Story," Electronic Learning. January 1988, pp. 24-30+.

The author explains what a LAN is and points out several reasons why networking can be more beneficial to schools than the traditional computer lab. The future possibilities of linking the instructional network to the administrative network are also discussed.

Telecommunications

Graham, John. The Facts on File Dictionary of Telecommunications. New York: Facts on File Publications, 1983.

The author's purpose in writing this book was to provide the layman with a reference to telecommunications principles. The terms are simply defined in keeping with international practice.

APPENDIX A

SAMPLE NETWORK PRINTOUT

STUDENT NAME	OBJECTIVE NAME	OBJ	LSSN	SCORE	PASS?
	ADVERBS	34	3/3	86	05/03
	WORDS USED AS AN ADVERB OR ADJ.	37	3/3	93	05/10
	PREPOSITIONS & PREP. PHRASES	38	3/3	88	05/10
	SENTENCES, FRAGMENTS, & RUN-ONS	43	6/3	71	05/17
	TOTALS & AVERAGE SCORE	5/46	18/15	85	5
	SIMPLE AND COMPOUND SENTENCES	41	2/3	100	05/18
	COMPOUND SUBJECTS & PREDICATES	42	1/3	93	NO
	SENTENCES, FRAGMENTS, & RUN-ONS	43	1/3	80	NO
	TOTALS & AVERAGE SCORE	3/46	4/9	91	1
	SIMPLE AND COMPOUND SENTENCES	41	6/3	97	05/18
	SENTENCES, FRAGMENTS, & RUN-ONS	43	6/3	89	05/18
	TOTALS & AVERAGE SCORE	2/46	12/6	93	2
	LINKING VERBS	16	1/3	93	NO
	HELPING VERBS AND MAIN VERBS	17	3/3	72	04/26
	OBJECTS OF A VERB	18	1/3	60	NO
	ADJECTIVES	29	3/3	80	05/03
	ADVERBS	34	1/3	52	NO
	WORDS USED AS AN ADVERB OR ADJ.	37	3/3	90	05/10
	PREPOSITIONS & PREP. PHRASES	38	3/3	94	05/10
	SENTENCES, FRAGMENTS, & RUN-ONS	43	3/3	100	05/17
	TOTALS & AVERAGE SCORE	7/46	17/21	78	5
	SIMPLE AND COMPOUND SENTENCES	41	3/3	97	05/10
	SENTENCES, FRAGMENTS, & RUN-ONS	43	3/3	90	05/10
	TOTALS & AVERAGE SCORE	2/46	6/6	94	2
	SIMPLE AND COMPOUND SENTENCES	41	1/3	100	NO
	HELPING VERBS AND MAIN VERBS	17	3/3	79	04/26
	ADJECTIVES	29	3/3	65	NO
	WORDS USED AS AN ADVERB OR ADJ.	37	2/3	80	05/10
	PREPOSITIONS & PREP. PHRASES	38	1/3	56	NO
	SENTENCES, FRAGMENTS, & RUN-ONS	43	3/3	77	05/17
	TOTALS & AVERAGE SCORE	5/46	12/15	71	3
	PREPOSITIONS & PREP. PHRASES	38	3/3	36	NO
	SIMPLE AND COMPOUND SENTENCES	41	1/3	100	NO
	VERBS: PRESENT, PAST & FUTURE	19	1/3	87	NO
	PREPOSITIONS & PREP. PHRASES	38	5/3	69	03/21
	ADJECTIVES	29	3/3	88	05/03
	ADVERBS	34	1/3	76	NO
	WORDS USED AS AN ADVERB OR ADJ.	37	1/3	67	NO
	TOTALS & AVERAGE SCORE	3/46	5/9	77	1

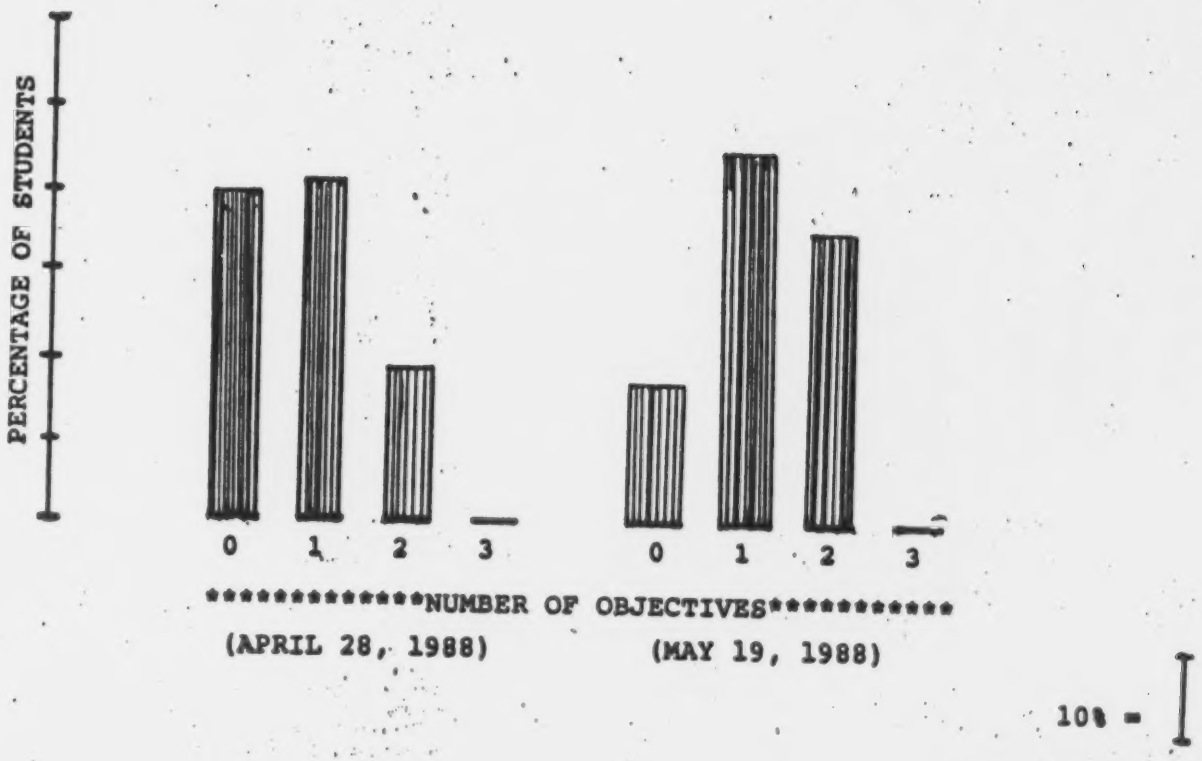
APPENDIX B

FIGURE 1

OBJECTIVES PASSED

FIGURE 1

OBJECTIVES PASSED



APPENDIX C

PRE/POST-TEST

PRE/POST-TEST

DIRECTIONS: Read each question and choose the correct answer. Write the letter on your answer sheet.

1. What do the letters in LAN (acronym) stand for?
   A. Learning About Networks
   B. Local Area Networks
   C. Learning Advanced Networks
2. What information is needed to "sign-on" the network?
   A. Name or Student Number
   B. Name and Grade
   C. Name and Student Number
3. Which item is considered your "secret password"*?
   A. Name (Last, First)
   B. Student Number
   C. Both A & B
4. What is the function of the arrow keys?
   A. Move the cursor up or down
   B. Move the cursor right or left
   C. Move the cursor around the screen

5. Which arrow key allows you to correct mistakes?

   A. Up

   B. Down

   C. Right

   D. Left

6. What command will be executed when the "Control Key" and the letter "Z" are simultaneously pressed?

   A. Takes you back to the previous menu

   B. Moves you to the next screen

   C. Erases answers so you may start over

7. What should you do when an asterisk (*) appears on the screen?

   A. Press "Return"

   B. Press "Spacebar"

   C. Press "Control" and "Reset"

8. What combination of keys allows you to exit any course or lesson?

   A. "Control" and "Reset"

   B. "Control" and "Z"

   C. "Control" and "E"

9. What is the maximum number of times that "Return" or ("Control" and "Reset") keys should be pressed?

   A. Five times

   B. One time

   C. Ten times

10. What is the major importance of networking to the world community?

A. Improved Communication

B. Improved Transportation

C. Improved Trade

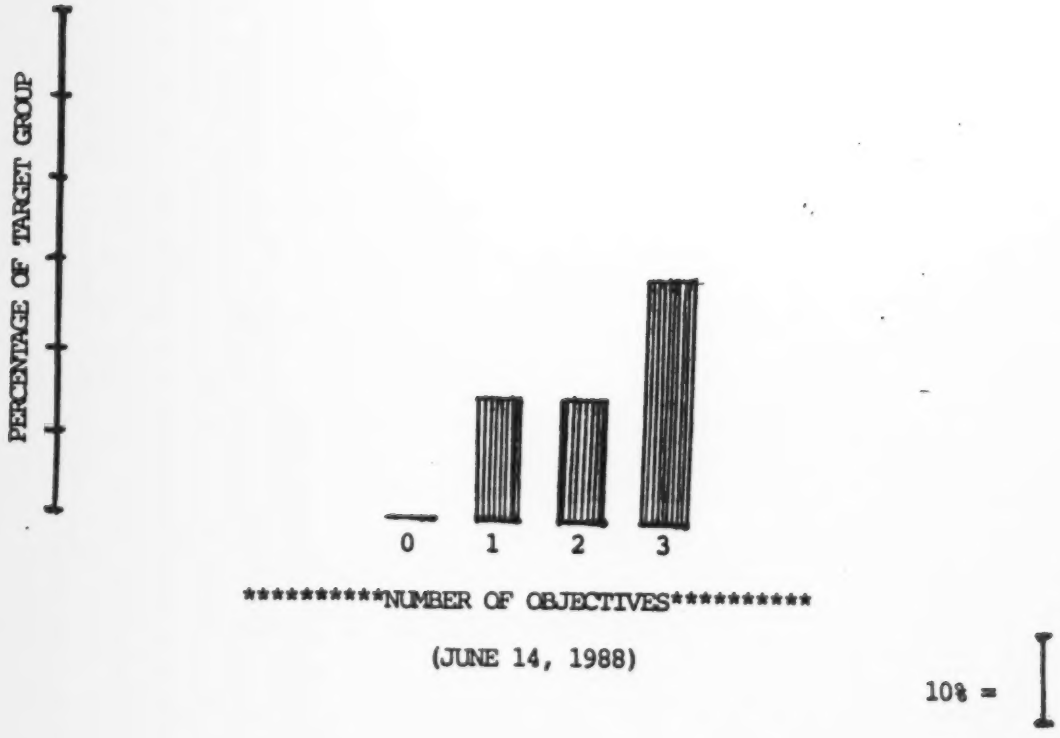
APPENDIX D

FIGURE 2

OBJECTIVES PASSED

FIGURE 2

OBJECTIVES PASSED



APPENDIX E

FIGURE 3

COMPARISON OF PRE/POST-TEST RESULTS

FIGURE 3

COMPARISON OF PRE/POST-TEST RESULTS

DISTRIBUTION OF SCORES

ADVANCED STUDENTS

PRETEST

20	30	40	50	60	70	80	90	100
		X	XX	X	X	XX XX XX XX	X	

POST-TEST

					X	XX XX X	XX X	XX XX X

AVERAGE STUDENTS

PRETEST

20	30	40	50	60	70	80	90	100
		XX	XX	XX	XX	XX	XX	

POST-TEST

					XX	XX	XX XX XX X	X

LOW AVERAGE STUDENTS

PRETEST

20	30	40	50	60	70	80	90	100
X	X	XX	X	XX X	XX X	XX XX		

POST-TEST

				60	70	80	90	100
				XX X	XX	XX XX XX XX	X	X

REMEDIAL STUDENTS

PRETEST

20	30	40	50	60	70	80	90	100
			X	XX XX X	XX			

POST-TEST

				60	70	80	90	100
				XX		XX XX	XX	

SPECIFIC LEARNING DISABLED STUDENTS

PRETEST

20	30	40	50	60	70	80	90	100
	X		X	XX	X	X		

POST-TEST

				X		XX X		

APPENDIX F

GLOSSARY

GLOSSARY

ACCESS: To retrieve; usually refers to the retrival of information from a DISK.

ARROW KEYS: (Up, Down, Right, Left) These keys move the cursor around the computer screen.

COMPUTER ASSISTED INSTRUCTION (CAI): Generally refers to computerized course presentation systems.

CONTROL KEY: Special function key used like a shift key. The CTRL Key is depressed along with another key and the combination is sensed as "unique INPUT" and a special code is generated.

CURRICULUM MANAGEMENT SYSTEM (ALSO COMPUTER MANAGED INSTRUCTION) (CMI): Refers to a computerized system for scoring, recording, and reporting performance on CAI courseware.

DISK DRIVE: A unit that holds, spins, reads and writes Magnetic Disks. The disk drive may take a floppy disk, removable disk pack or disk cartridge or it may contain FIXED (HARD) DISKS.

ELECTRONIC MAIL SYSTEM: The process of sending and receiving messages electronically by computer.

FILE SERVER: A specified computer on a network that manages access to files on a hard disk. Users can access other users' files if given the proper access code.

FLOPPY DISK (DISKETTE): A common storage device used with micro-computers; a flexible disk made of plastic and magnetically coated; it has openings in its jacket to allow the disk drive to read or write information.

HARD DISK: A magnetic storage device that is permanently sealed in a case and can store much more data than a floppy disk. The entire Curriculum Manager System is stored on a hard disk.

HARDWARE: The physical equipment of a computer. (screen, storage device, keyboard).

HELP SCREEN: A special screen which clarifies directions or further explains choices on a Menu.

LOCAL AREA NETWORK (LAN): A number of microcomputers or terminals, usually located in the same room or building, connected by cables or wires.

LOG-ON: The act performed by a user entering the network system in order to complete certain tasks.

LOG-OFF: The act performed by a user when he concludes a particular lesson on the network. ⟨CONTROL⟩ ⟨RESET⟩

MENU: A display listing the choices of things one can do on the particular system one is using.

NETWORK: A system of interconnected computers and peripherals.

NETWORKING: The techniques and principles concerned with maintaining a system of communication.

NETWORK MANAGER: The person responsible for the operation of the network. The manager sets up user and group lists and assigns passwords.

OBJECTIVE: A portion of a course that describes what a student should know or be able to do upon completion of a certain learning activity.

OFF-LINE: Electronically disconnected from the network system.

ON-LINE: Electronically connected to the network system.

PASSWORD: A secret combination of characters that is sometimes required to log-on to the Disk Drive. A 1-4 character code is assigned by the network manager to limit system access and ensure security of the system. The four-digit character code is usually a student's school identification number.

PRINTOUT: (Hard Copy) Computer-generated information that is printed on paper.

RECORD: Stored student information. The record retains student data such as name, grade, address, and academic progress.

REGISTERED USER: A user who logs-on the network by specifying a valid user name and password.

RESET: Key on the computer which returns the user to a specified initial condition or locates to zero.

RETURN KEY: (Enter Key) A key found on computers used to enter information into the computer.

SIGN-ON: See LOG-ON.

SITE LICENSING AGREEMENT: A contract existing between a Network Software Producing Company and a Business or School. It allows for the reasonable pricing of software by site location, network or the number of users. The Software Company's product is copy-protected and the school or business has unlimited use of the network software at the licensed site.

SYSTEM'S SOFTWARE: Programs, language, and directions that tell the computers what to do and how to do it. It is stored on the Disk Drive.

TELECOMMUNICATIONS: Transmission of data from one point to another by communication lines.

USER FRIENDLY: A describer of hardware, software, and other devices indicating that they are easy to use for non-technical people.

APPENDIX G

SOFTWARE DOCUMENTATION

FLOWCHART

PROGRAM PRINTOUT

SOFTWARE DOCUMENTATION

TITLE: WELCOME TO CSMS NETWORK

AUTHOR: SHIRLEY S. CASTOLDI

DATE: MAY, 1988 SUBJECT: LOCAL AREA NETWORK (LAN)

USERS: MIDDLE SCHOOL STUDENTS (GRADES 6 - 8)

GROUPING: INDIVIDUAL PAIRS SMALL GROUPS

INSTRUCTIONAL PURPOSE: STANDARD INSTRUCTION REMEDIAL

INSTRUCTION TECHNIQUE: TUTORIAL

TIME REQUIRED: APPROXIMATELY 15 MINUTES TO RUN PROGRAM

HARDWARE REQUIREMENTS:

MANUFACTURER	MEMORY	DRIVES	PHERIPHERALS
APPLE II PLUS APPLE IIe	48K 64K	SINGLE DISK	COLOR MONITOR

ADDITIONAL MATERIAL: APPLE LOGO, Logo Computer Systems, Inc. 1980.

COST: $70.00

****

HOW TO RUN THE PROGRAM (INDIVIDUAL COMPUTER, OFF-LINE)

STUDENT DIRECTIONS:

1. LOAD THE APPLE LOGO PROGRAM.
2. WHEN THE WORDS "IF YOU HAVE YOUR OWN FILE DISKETTE ..." APPEAR, REMOVE THE APPLE LOGO DISKETTE AND INSERT THE DISKETTE ENTITLED, "WELCOME TO CSMS NETWORK."
3. PRESS RETURN.

NOTES TO THE LAB MANAGER:

This software package was specifically designed to assist students in the procedures needed to "sign-on" the Digicard Local Area Network. It also teaches the effective use of computer command keys needed to operate the networking software, INTEGRATED CLASSROOM LEARNING SYSTEMS developed by Ideal Learning, Inc.

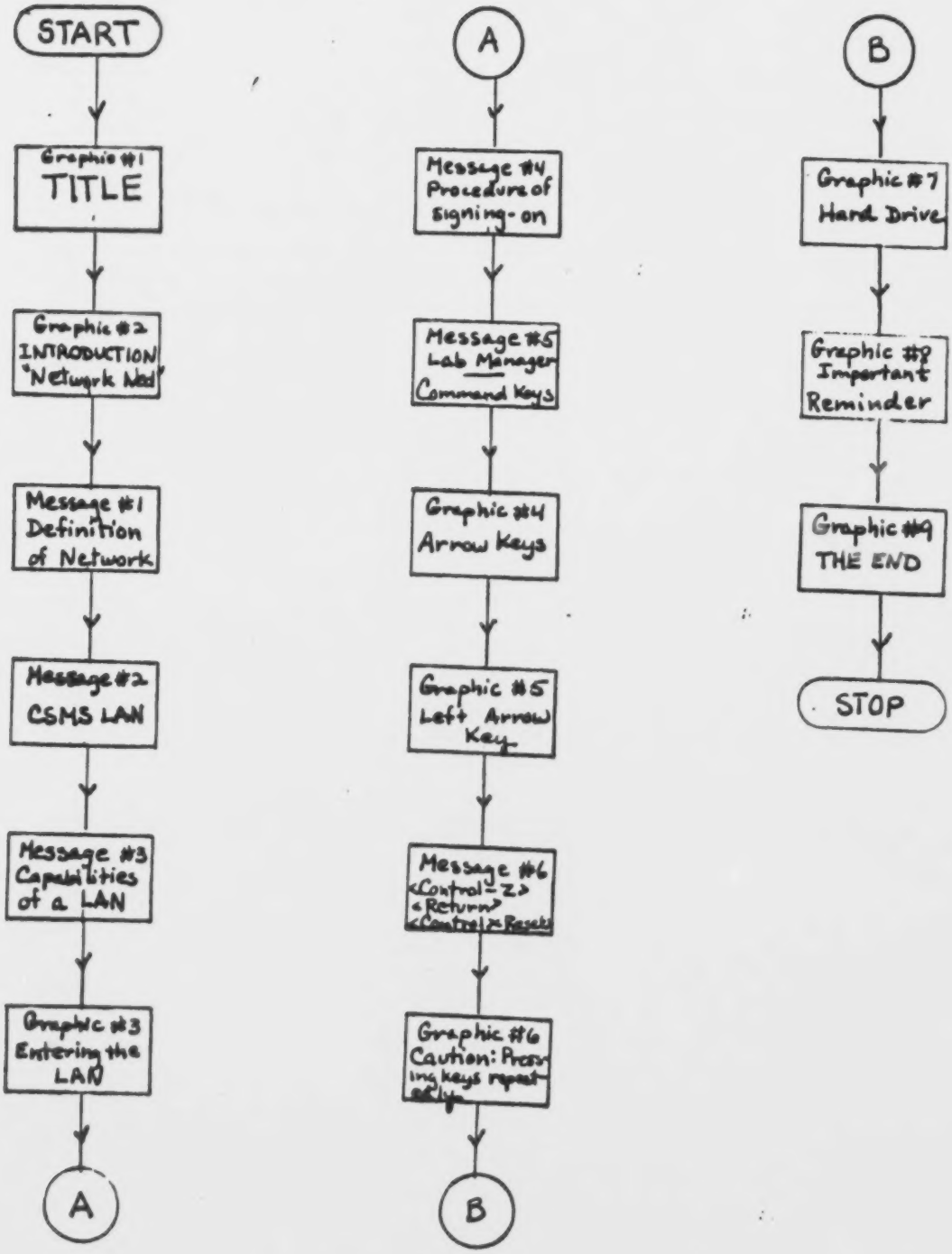
"WELCOME TO CSMS NETWORK" can be run on a LAN utilizing LOGOWRITER. If this networking software is not available, APPLE LOGO can be used to run the tutorial if the following rules are observed:

1. There should be an APPLE LOGO diskette for every computer used.

2. The computers must be taken off-line and used as stand-alone units for this purpose.

3. The program can be run using STUDENT DIRECTIONS. (Steps on previous page.)

FLOWCHART


START
Graphic #1 TITLE
Graphic #2 INTRODUCTION "Network Need"
Message #1 Definition of Network
Message #2 CSMS LAN
Message #3 Capabilities of a LAN
Graphic #3 Entering the LAN
A
A
Message #4 Procedure of signing-on
Message #5 Lab Manager Command Keys
Graphic #4 Arrow Keys
Graphic #5 Left Arrow Key
Message #6 <Control-Z> <Return> <Control/X Reset>
Graphic #6 Caution: Press ing keys repeat
B
B
Graphic #7 Hard Drive
Graphic #8 Important Reminder
Graphic #9 THE END
STOP

```
 ?CATALOG

DISK VOLUME 254

 A   2 HELLO
 T   5 STARTUP.LOGO
 T   4 FINAL.LOGO
 T   9 TITLE.LOGO
 T   6 MESSAGE4.LOGO
 T   5 MESSAGE5.LOGO
 T   6 FRAME1.LOGO
 T   3 MESSAGE1.LOGO
 T   3 MESSAGE2.LOGO
 T   4 MESSAGE3.LOGO
 T   4 FRAME2.LOGO
 T   6 FRAME3.LOGO
 T   6 FRAME4.LOGO
 T   6 FRAME5.LOGO
 T   6 FRAME6.LOGO
 T   3 MESSAGE6.LOGO
 T   3 MESSAGE7.LOGO
 T   6 FRAME7.LOGO
 T   5 AIDS.LOGO
?LOAD "AIDS
?POTS
TO CHAIN
?POPS
TO CHAIN
CLEARTEXT
SETCURSOR SE 5 5
PR [THE PROGRAM IS LOADING.]
SETCURSOR SE 5 10
PR [IT MAY TAKE SOME TIME.]
SETCURSOR SE 5 15
TYPE [PLEASE BE PATIENT...]
LOAD "AIDS
ERALL
RECYCLE
LOAD "TITLE
TITLE
ERALL
RECYCLE
LOAD "FRAME1
FRAME1
ERALL
RECYCLE
LOAD "MESSAGE1
```

```
ERALL
RECYCLE
LOAD "MESSAGE2
MESSAGE2
ERALL
RECYCLE
LOAD "MESSAGE3
MESSAGE3
ERALL
RECYCLE
LOAD "FRAME2
FRAME2
ERALL
RECYCLE
LOAD "MESSAGE4
MESSAGE4
ERALL
RECYCLE
LOAD "MESSAGE5
MESSAGE5
ERALL
RECYCLE
LOAD "FRAME3
FRAME3
ERALL
RECYCLE
LOAD "FRAME4
FRAME4
ERALL
RECYCLE
LOAD "MESSAGE6
MESSAGE6
ERALL
RECYCLE
LOAD "MESSAGE7
MESSAGE7
ERALL
RECYCLE
LOAD "FRAME5
FRAME5
ERALL
RECYCLE
LOAD "FRAME6
FRAME6
ERALL
RECYCLE
LOAD "FRAME7
FRAME7
ERALL
RECYCLE
LOAD "FINAL
FINAL
END

?ERALL
?LOAD "TITLE
?POTS
TO AUTHOR
TO SKIP
TO W
TO E
TO L
TO C
TO O
TO M
TO T
```

```
TO T
TO S
TO N
TO R
TO K
TO B
TO A
TO H
TO TITLE
?POPS
TO AUTHOR
PR [WRITTEN BY SHIRLEY S. CASTOLDI]
END

TO SKIP
PU RT 90 FD 5 LT 90 PD
END

TO W
PD
LT 15
FD 30
BK 30
RT 30
FD 15
RT 150
FD 15
LT 150
FD 30
PU
LT 15
BK 30
END

TO E
PD
FD 30
RT 90
FD 15
BK 15
LT 90
BK 15
RT 90
FD 13
BK 13
LT 90
BK 15
RT 90
FD 15
LT 90
END

TO L
PD
FD 30
BK 30
RT 90
FD 15
LT 90
END

TO C
PD
LT 135
FD 3
RT 45
```

```
RT 45
FD 3
RT 45
FD 24
RT 45
FD 3
RT 45
FD 10
RT 45
FD 3
PU
FD 24
RT 225
BK 9
END

TO O
PD
FD 24
RT 45
FD 3
RT 45
FD 13
RT 45
FD 3
RT 45
FD 24
RT 45
FD 3
RT 45
FD 13
RT 45
FD 3
PU
BK 3
RT 135
FD 15
LT 90
END

TO M
PD
FD 30
RT 145
FD 15
LT 110
FD 15
RT 145
FD 30
PU
LT 180
END

TO T
PD
FD 30
LT 90
FD 10
BK 20
RT 90
PU
BK 30
END

TO S
PD
```

```
LT 45
FD 3
LT 45
FD 12
LT 45
FD 3
LT 45
FD 9
LT 45
FD 3
LT 45
FD 12
RT 45
FD 3
RT 45
FD 9
RT 45
FD 4
RT 45
FD 12
RT 45
FD 4
PU
BK 4
RT 135
FD 18
LT 90
END

TO N
PD
FD 30
RT 155
FD 33
LT 155
FD 30
BK 30
PU
END

TO R
PD
FD 30
RT 90
FD 12
RT 45
FD 3
RT 45
FD 15
RT 45
FD 3
RT 45
FD 12
BK 8
RT 50
BK 15
RT 40
END

TO K
PD
FD 30
BK 15
RT 45
FD 22
```

```
FD 25
PU
LT 145
END

TO B
PD
FD 30
RT 90
FD 12
RT 45
FD 3
RT 45
FD 12
RT 45
FD 3
RT 45
FD 12
RT 180
FD 12
RT 45
FD 3
RT 45
FD 12
RT 45
FD 3
RT 45
FD 12
RT 90
FD 5
PU
BK 5
RT 90
FD 12
LT 90
END

TO A
PD
FD 30
RT 90
FD 15
RT 90
FD 30
RT 180
FD 15
LT 90
FD 15
PU
RT 180
FD 15
RT 90
FD 15
RT 180
END

TO H
PD
FD 30
BK 15
RT 90
FD 15
LT 90
FD 15
BK 15
```

```
RT 180
FD 15
RT 180
PU
END

TO TITLE
HT SETBG 5 SETPC 1 PU HT
LT 90 FD 90 RT 90
FD 55 PD W SKIP SKIP E
SKIP SKIP L SKIP SKIP SKIP SKIP
SKIP FD 3 C O SKIP SKIP M SKIP SKIP
E PU HOME
LT 90 FD 90 LT 90 PD RT 180
T SKIP FD 2 O PU RT 90 FD 50 LT 90
PD FD 3 C SKIP SKIP PU FD 25 PD S
SKIP SKIP M PU RT 90 FD 30 LT 90
FD 25 PD S PU HOME LT 90
FD 93 LT 90 FD 55 PD RT 180 N SKIP
SKIP E SKIP SKIP SKIP T SKIP SKIP SKIP
W SKIP SKIP FD 2 O SKIP SKIP R SKIP
SKIP K SKIP PU HOME AUTHOR WAIT 300
CS CLEARTEXT
END

?ERALL
?LOAD "FRAME1
?POTS
TO CURTAIN
TO FRAME1
TO NED
?POPS
TO CURTAIN
HT SETBG 1 SETPC 5 PU RT 45
SETPOS SE -139 100 PD
REPEAT 5 [ARCR 20 90 ARCL 20 90]
PU RT 45 FD 50 RT 120 PD FD 90
LT 50 FD 110 PU SETPOS SE 85 100
PD LT 10 FD 90 RT 50 FD 110 PU
HOME
END

TO FRAME1
CURTAIN
NED
PR [MY NAME IS "NETWORK NED" AND]
PR [IT IS MY PLEASURE TO WELCOME YOU]
PR [TO THE WORLD OF NETWORKING.]
PRESSR
CS CLEARTEXT
END

TO NED
HT PU FD 60 LT 90 FD 20 RT 90 SETPC 4
PD CIRCLER 20 RT 90 PU FD 15 PD FD 1
PU FD 12 PD FD 1 PU LT 90 FD 10 RT 45
PD FD 15 RT 90 FD 2 LT 90 CIRCLER 2
PU LT 135 FD 40 RT 90 FD 5 PD
CIRCLEL 2 RT 145 FD 18 PU HOME FD 40
RT 90 PD CIRCLER 50 SETSCRUNCH .8
PU HOME LT 90 FD 20 LT 45 PD FD 5
RT 90 FD 40 LT 90 CIRCLER 6 PU HOME
RT 90 FD 20 RT 45 PD FD 5 LT 90
FD 40 RT 90 CIRCLEL 6 PU HOME RT 180
FD 30 RT 90 FD 20 LT 45 PD FD 5
```

```
RT 180 FD 30 LT 90 FD 20 RT 45 PD
FD 5 LT 90 FD 40 RT 90 CIRCLEL 6 PU
HOME
RT 180 FD 50 LT 90 FD 20 PD FD 20
RT 45 FD 5 CIRCLEL 8 PU HOME RT 180
FD 50 RT 90 FD 20 PD FD 20 LT 45
FD 5 CIRCLER 8 PU HOME FD 50 ST
END

?ERALL
?LOAD "MESSAGE1
?POTS
TO MESSAGE1
?POPS
TO MESSAGE1
TEXTSCREEN
CLEARTEXT
SETCURSOR SE 0 5
PR [WHAT IS A NETWORK?]
PR []
PR []
PR [A NETWORK CAN BE THOUGHT OF AS A]
PR []
PR [HIGH-SPEED INFORMATION HIGHWAY.]
PR []
PR [IT ALLOWS COMPUTERS TO "TALK" TO]
PR []
PR [EACH OTHER IN A SINGLE ROOM,]
PR []
PR [BUILDING, CITY, NATION OR EVEN]
PR []
PR [THROUGHOUT THE WORLD.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "MESSAGE2
?POTS
TO MESSAGE2
?POPS
TO MESSAGE2
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 5
PR [AT CORAL SPRINGS MIDDLE SCHOOL]
PR []
PR [YOU WILL BE USING A LOCAL AREA]
PR []
PR [NETWORK (LAN). LAN'S SERVE THE]
PR []
PR [COMPUTING NEEDS OF STUDENTS IN]
PR []
PR [A SINGLE CLASSROOM, SCHOOL OR]
PR []
PR [EVEN A CLUSTER OF BUILDINGS ON]
PR []
PR [THE SAME CAMPUS.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "MESSAGE3
?POTS
TO MESSADGE3
TO MESSAGE3
?POPS
TO MESSADGE3
```

```
END

TO MESSAGE3
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 2
PR [THE DIGICARD CLASSROOM LAN]
PR []
PR []
PR [...ALLOWS SOFTWARE TO BE LOADED]
PR []
PR [TO 30 OR MORE COMPUTERS AT THE]
PR []
PR [SAME TIME.]
PR []
PR [...ALLOWS USERS TO SHARE A COMMON]
PR []
PR [PRINTER.]
PR []
PR [...PROVIDES FEEDBACK TO THE]
PR []
PR [STUDENTS AND TEACHERS.]
PR []
PR [...ALLOWS COMPUTERS TO USE THE]
PR []
PR [SAME OR DIFFERENT SOFTWARE.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "FRAME2
?POTS
TO MOON
TO STARS
TO ROCKET
TO FRAME2
?POPS
TO MOON
PU SETBG 5 SETPC 1 LT 110 SETPOS [-50 50] HT PD ARCL 45 180 LT 90 PU FD 90
PD LT 130 ARCL 57 100 HT PU
END

TO STARS
HT PU SETPOS [65 65] PD REPEAT 5 [FD 15 RT 144] PU SETPOS [50 50] PD
REPEAT 5 [FD 15 RT 144] PU
SETPOS [-80 80] PD REPEAT 5 [FD 15 RT 144] PU HOME
END

TO ROCKET
HT SETBG 5 HOME SETPC 0 PD RT 90 FD 20
RT 45 FD 40 LT 45 FD 15 RT 45 FD 15 RT 90 FD 30 PU HOME LT 180 PD FD 15 LT 4
FD 50 RT 45 FD 15 LT 45 FD 10 LT 90 FD 15 HOME PU RT 135 FD 80 SETPC 4 PD
FD 10 RT 90 PU FD 7 RT 90 PD FD 20
PU RT 90 FD 15 RT 90 PD FD 30 PU HOME
END

TO FRAME2
HT MOON
STARS
ROCKET
PR [HOW DO YOU ENTER THE WORLD OF]
PR [NETWORKING?]
PRESSR CLEARTEXT
END

?ERALL
```

```
TO MOON
TO STARS
TO ROCKET
TO MESSAGE4
TO FRAME2
?POPS
TO MOON
PU SETBG 5 SETPC 1 LT 110 SETPOS [-50 50] HT PD ARCL 45 180 LT 90 PU FD 90
PD LT 130 ARCL 57 100 HT PU
END

TO STARS
HT PU SETPOS [65 65] PD REPEAT 5 [FD 15 RT 144] PU SETPOS [50 50] PD
REPEAT 5 [FD 15 RT 144] PU
SETPOS [-80 80] PD REPEAT 5 [FD 15 RT 144] PU HOME
END

TO ROCKET
HT SETBG 5 HOME SETPC 0 PD RT 90 FD 20
RT 45 FD 40 LT 45 FD 15 RT 45 FD 15 RT 90 FD 30 PU HOME LT 180 PD FD 15 LT 45
FD 50 RT 45 FD 15 LT 45 FD 10 LT 90 FD 15 HOME PU RT 135 FD 80 SETPC 4 PD
FD 10 RT 90 PU FD 7 RT 90 PD FD 20
PU RT 90 FD 15 RT 90 PD FD 30 PU HOME
END

TO MESSAGE4
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 2
PR [THIS IS HOW YOUR NAME MUST BE]
PR []
PR [TYPED TO "SIGN ON" TO THE SYSTEM.]
PR []
PR []
SETCURSOR SE 10 7 PR [SMITH, MARY]
PR []
PR [LAST NAME, (COMMA) FIRST NAME]
PR []
PR []
PR [NEXT, YOU WILL ENTER YOUR STUDENT]
PR []
PR [NUMBER. TYPE IT ACCURATELY. THIS]
PR []
PR [IS HOW YOUR NUMBER WILL APPEAR.]
PR []
SETCURSOR SE 13 18 PR [XXXX]
PR []
PR [AFTER ALL, IT IS A SECRET PASSWORD.]
PRESSR CLEARTEXT
END

TO FRAME2
HT MOON
STARS
ROCKET
PR [HOW DO YOU ENTER THE WORLD OF]
PR [NETWORKING?]
END

?ERALL
?LOAD "MESSAGE5
?POTS
TO MESSAGE5
TO MESSAGE4
?POPS
TO MESSAGE5
```

```
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 0
PR [WHEN A MENU APPEARS ON THE SCREEN,]
PR []
PR [YOU HAVE "SIGNED ON" TO THE LAN.]
PR []
PR [YOUR TEACHER OR LAB MANAGER WILL]
PR []
PR [TELL YOU WHICH LESSONS YOU ARE]
PR []
PR [EXPECTED TO COMPLETE. IT COULD BE]
PR []
PR [ANY SUBJECT AREA SO LISTEN VERY]
PR []
PR [CAREFULLY.]
PR []
PR []
PR [ALSO, AS YOU WORK THROUGH EACH]
PR []
PR [PROGRAM YOU WILL NEED TO REMEMBER]
PR []
PR [THE FUNCTION OF THE FOLLOWING]
PR []
PR [COMMAND KEYS.]
PRESSR CLEARTEXT
END

TO MESSAGE4
TEXTSCREEN SETCURSOR SE 0 5
PR [THIS IS HOW YOUR NAME MUST BE]
PR []
PR [TYPED TO "SIGN ONTO" THE SYSTEM.]
PR []
PR []
PR [SMITH, MARY]
PR []
PR [LAST NAME, ( COMMA ) FIRST NAME]
PR []
PR []
PR [NEXT, YOU WILL ENTER YOUR STUDENT]
PR []
PR [NUMBER. TYPE IT ACCURATELY. THIS]
PR []
PR [IS HOW YOUR NUMBER WILL APPEAR.]
PR []
PR [XXXX]
PR []
PR [AFTER ALL, IT IS A SECRET PASSWORD.]
END

?ERALL
?LOAD "FRAME3
?POTS
TO ARROWS
TO ARROWS2
TO ARROWS3
TO C
TO B
TO A
TO FRAME3
?POPS
TO ARROWS
PU HT SETBG 5 SETPC 4 SETPOS [-20 60]
PD FD 30 LT 135 FD 15 BK 15 RT 270
FD 15 BK 15 LT 135
END
```

```
TO ARROWS2
PU HT SETPC 4 SETPOS [20 40] RT 180
PD FD 30 LT 135 FD 15 BK 15 RT 270 FD 15 BK 15 LT 135 PU
RT 180
END

TO ARROWS3
HT PU SETPC 4 SETPOS [35 -25] RT 90
PD FD 30 RT 135 FD 15 BK 15 LT 270 FD 15 BK 15 RT 135
END

TO C
PU HT SETPC 4 SETPOS [10 -40]
PD LT 135 FD 3 RT 45 FD 10 RT 45 FD 3
RT 45 FD 24 RT 45 FD 3 RT 45 FD 10
RT 45 FD 3 PU FD 24 RT 225 BK 9
LT 90 PD FD 3 RT 90 PU
END

TO B
HT PU SETPC 4 SETPOS [-30 10]
PD FD 30 RT 90 FD 12 RT 45 FD 3 RT 45
FD 12 RT 45 FD 3 RT 45 FD 12
RT 180
FD 12 RT 45 FD 3 RT 45 FD 12 RT 45 FD 3 RT 45 FD 12 RT 90 FD 5
PU BK 5 RT 90 FD 12 RT 90
LT 90 PU FD 10 PD FD 3 PU LT 90
END

TO A
PU SETPOS [-70 60]
SETPC 4 PD FD 30 RT 90 FD 15 RT 90
FD 30 RT 180 FD 15 LT 90 FD 15 PU RT 180 FD 15 RT 90 FD 15 RT 180 PU RT 90 FD 1
 PD FD 3 PU LT 90 HT
END

TO FRAME3
HT ARROWS A B ARROWS2 C ARROWS3
PR [ARROW KEYS: A. UP  B. DOWN  C. RIGHT]
PR [THESE MOVE THE CURSOR AROUND THE]
PR [SCREEN.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "FRAME4
?POTS
TO ARROWS
TO ARROWS2
TO ARROWS3
TO C
TO B
TO A
TO FRAME4
?POPS
TO ARROWS
PU HT SETBG 5 SETPC 4 SETPOS [-20 60]
PD FD 30 LT 135 FD 15 BK 15 RT 270
FD 15 BK 15 LT 135
END

TO ARROWS2
PU HT SETPC 4 SETPOS [20 40] RT 180
PD FD 30 LT 135 FD 15 BK 15 RT 270 FD 15 BK 15 LT 135 PU
RT 180
```

```
TO ARROWS3
HT PU SETPC 4 SETPOS [35 -25] RT 90
PD FD 30 RT 135 FD 15 BK 15 LT 270 FD 15 BK 15 RT 135
END

TO C
PU HT SETPC 4 SETPOS [10 -40]
PD LT 135 FD 3 RT 45 FD 10 RT 45 FD 3
RT 45 FD 24 RT 45 FD 3 RT 45 FD 10
RT 45 FD 3 PU FD 24 RT 225 BK 9
LT 90 PD FD 3 RT 90 PU
END

TO B
HT PU SETPC 4 SETPOS [-30 10]
PD FD 30 RT 90 FD 12 RT 45 FD 3 RT 45
FD 12 RT 45 FD 3 RT 45 FD 12
RT 180
FD 12 RT 45 FD 3 RT 45 FD 12 RT 45 FD 3 RT 45 FD 12 RT 90 FD 5
PU BK 5 RT 90 FD 12 RT 90
LT 90 PU FD 10 PD FD 3 PU LT 90
END

TO A
PU SETPOS [-70 60]
SETPC 4 PD FD 30 RT 90 FD 15 RT 90
FD 30 RT 180 FD 15 LT 90 FD 15 PU RT 180 FD 15 RT 90 FD 15 RT 180 PU RT 90 FD
 PD FD 3 PU LT 90 HT
END

TO FRAME4
HT SETBG 2 SETPC 3
PU HOME FD 25 RT 90 FD 40 PD RT 90
FD 30 RT 90 FD 80 LT 90 FD 10 RT 135
FD 40 RT 90 FD 40 RT 135 FD 10 LT 90
FD 80 RT 90
FD 5 PU
PR [ARROW KEYs (LEFT) THIS COMMAND KEY]
PR [ALLOWS YOU TO CORRECT MISTAKES.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "MESSAGE6
?POTS
TO MESSAGE6
?POPS
TO MESSAGE6
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 0
PR [<CONTROL-Z>] PR [] PR [PRESS THE <CONTROL> KEY AND THE]
PR []
PR [LETTER <Z> SIMULTANEOUSLY. THIS]
PR []
PR [COMMAND WILL TAKE YOU BACK TO]
PR []
PR [THE PREVIOUS MENU.]
PR []
PR []
PR [<RETURN>]
PR []
PR [PRESS <RETURN> WHEN YOU SEE THE]
?R []
?R [ASTERISK (*) IN THE LOWER]
```

```
PR []
PR [RIGHT-HAND CORNER OF THE SCREEN.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "MESSAGE7
?POTS
TO MESSAGE7
?POPS
TO MESSAGE7
TEXTSCREEN
CLEARTEXT SETCURSOR SE 0 2
PR [<RETURN>]
PR []
PR [PRESS <RETURN> WHEN YOU RESPOND]
PR []
PR [TO A QUESTION OR PROBLEM. REMEMBER,]
PR []
PR [IT WILL BE RECORDED ON THE LAN.]
PR []
PR []
PR [<CONTROL> <RESET>]
PR []
PR [PRESS <CONTROL> AND <RESET> KEYS]
PR []
PR [SIMULTANEOUSLY TO EXIT ANY COURSE]
PR []
PR [OR LESSON.]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "FRAME5
?POTS
TO SNEAKER
TO FRAME5
TO NED
?POPS
TO SNEAKER
HT PU SETPC 1 SETPOS [140 -40] PD
RT 45 FD 150 LT 36 FD 10 LT 36 FD 10
LT 36 FD 10 LT 36 FD 10 LT 10 FD 80
LT 135 FD 20 LT 90 FD 20 RT 90 FD 20
LT 90 FD 20 PU SETPOS [-140 -50]
PD RT 20 FD 20 FD 140 LT 36 FD 10
LT 50 FD 15 PU HOME ST FD 50
END

TO FRAME5
SETBG 0 NED SNEAKER
PR [CAUTION: <RETURN> AND <CONTROL>]
PR [<RESET> KEYS SHOULD ONLY BE PRESSED]
PR [ONCE.  WHY?]
PRESSR CLEARTEXT
END

TO NED
HT PU FD 60 LT 90 FD 20 RT 90 SETPC 4
PD CIRCLER 20 RT 90 PU FD 15 PD FD 1
PU FD 12 PD FD 1 PU LT 90 FD 10 RT 45
PD FD 15 RT 90 FD 2 LT 90 CIRCLER 2
PU LT 135 FD 40 RT 90 FD 5 PD
CIRCLEL 2 RT 145 FD 18 PU HOME FD 40
RT 90 PD CIRCLER 50 SETSCRUNCH .8
```

```
RT 90 FD 40 LT 90 CIRCLER 6 PU HOME
RT 90 FD 20 RT 45 PD FD 5 LT 90
FD 40 RT 90 CIRCLEL 6 PU HOME RT 180
FD 30 RT 90 FD 20 LT 45 PD FD 5
RT 90 FD 40 LT 90 CIRCLER 6 PU HOME
RT 180 FD 30 LT 90 FD 20 RT 45 PD
FD 5 LT 90 FD 40 RT 90 CIRCLEL 6 PU
HOME
RT 180 FD 50 LT 90 FD 20 PD FD 20
RT 45 FD 5 CIRCLEL 8 PU HOME RT 180
FD 50 RT 90 FD 20 PD FD 20 LT 45
FD 5 CIRCLER 8 PU HOME FD 50 ST
END

?ERALL
?LOAD "FRAME6
?POTS
TO HARDDRIVE
TO APPLEA
TO APPLEB
TO APPLEC
TO BOXA
TO DRIVE
TO BOXB
TO BOXC
TO FRAME6
?POPS
TO HARDDRIVE
SETBG 5 HT SETPC 0 PU SETPOS [20 -10]
PD RT 90 FD 80 RT 90 FD 50 RT 90 FD 80
RT 90 FD 50 BK 20 RT 90 FD 80 PU LT 90
END

TO APPLEA
HT PU SETPOS [-50 -20] SETPC 0
PD FD 30 LT 90 FD 50 LT 90 FD 30 RT 45
FD 20 LT 45 FD 10 LT 90 FD 80 LT 90
FD 10 LT 45 FD 20 PU RT 45
END

TO APPLEB
HT PU SETPOS [0 50] SETPC 0 PD
FD 30 LT 90 FD 50 LT 90 FD 30 RT 45
FD 20 LT 45 FD 10 LT 90 FD 80 LT 90
FD 10 LT 45 FD 20 PU RT 45
END

TO APPLEC
HT PU SETPOS [100 70] SETPC 0
PD FD 30 LT 90 FD 50 LT 90 FD 30
RT 45 FD 20 LT 45 FD 10 LT 90 FD 80
LT 90 FD 10 LT 45 FD 20 PU RT 45
END

TO BOXA
HT PU SETPOS [-60 -20]
SETPC RANDOM 4
PD FD 20 LT 90 FD 30 LT 90
FD 20 LT 90 FD 30 PU LT 90
END

TO DRIVE
SETPC RANDOM 4
PU SETPOS [30 -20] PD
RT 90 FD 20 RT 90 FD 5 RT 90 FD 20
RT 90 FD 5 PU
```

```
END

TO BOXB
HT PU SETPOS [-10 50]
SETPC RANDOM 4 PD
FD 20 LT 90 FD 30 LT 90 FD 20 LT 90
FD 30 PU LT 90
END

TO BOXC
HT PU SETPOS [90 70]
SETPC RANDOM 4 PD
FD 20 LT 90 FD 30 LT 90 FD 20 LT 90
FD 30 PU LT 90
END

TO FRAME6
HARDDRIVE
APPLEA APPLEB APPLEC
PR [THE HARD DRIVE CAN ONLY "TALK"]
PR [TO ONE COMPUTER AT A TIME.]
REPEAT 10 [BOXA DRIVE]
REPEAT 10 [BOXB DRIVE]
REPEAT 10 [BOXC DRIVE]
PRESSR CLEARTEXT
END

?ERALL
?LOAD "FRAME7
?POTS
TO CURTAIN
TO FRAME7
TO NED
?POPS
TO CURTAIN
HT SETBG 5 SETPC 1 PU RT 45
SETPOS SE -139 100 PD
REPEAT 5 [ARCR 20 90 ARCL 20 90]
PU RT 45 FD 50 RT 120 PD FD 90
LT 50 FD 110 PU SETPOS SE 85 100
PD LT 10 FD 90 RT 50 FD 110 PU
HOME
END

TO FRAME7
CURTAIN
NED
PR [REMEMBER MY INSTRUCTIONS AND YOU]
PR [WILL ENJOY VISITING THE WORLD OF]
PR [NETWORKING.]
PRESSR CLEARTEXT
END

TO NED
HT PU FD 60 LT 90 FD 20 RT 90 SETPC 4
PD CIRCLER 20 RT 90 PU FD 15 PD FD 1
PU FD 12 PD FD 1 PU LT 90 FD 10 RT 45
PD FD 15 RT 90 FD 2 LT 90 CIRCLER 2
PU LT 135 FD 40 RT 90 FD 5 PD
CIRCLEL 2 RT 145 FD 18 PU HOME FD 40
RT 90 PD CIRCLER 50 SETSCRUNCH .8
PU HOME LT 90 FD 20 LT 45 PD FD 5
RT 90 FD 40 LT 90 CIRCLER 6 PU HOME
RT 90 FD 20 RT 45 PD FD 5 LT 90
FD 40 RT 90 CIRCLEL 6 PU HOME RT 180
FD 30 RT 90 FD 20 LT 45 PD FD 5
```

```
RT 90 FD 40 LT 90 CIRCLER 6 PU HOME
RT 180 FD 30 LT 90 FD 20 RT 45 PD
FD 5 LT 90 FD 40 RT 90 CIRCLEL 6 PU
HOME
RT 180 FD 50 LT 90 FD 20 PD FD 20
RT 45 FD 5 CIRCLEL 8 PU HOME RT 180
FD 50 RT 90 FD 20 PD FD 20 LT 45
FD 5 CIRCLER 8 PU HOME FD 50 ST
END

?ERALL
?LOAD "FINAL
?POTS
TO D
TO SKIP
TO E
TO T
TO N
TO H
TO FINAL
?POPS
TO D
PD FD 30 RT 90 FD 12 RT 45
FD 3 RT 45 FD 26 RT 45 FD 3
RT 45 FD 12 PU BK 15 RT 90
END

TO SKIP
PU RT 90 FD 5 LT 90 PD
END

TO E
PD
FD 30
RT 90
FD 15
BK 15
LT 90
BK 15
RT 90
FD 13
BK 13
LT 90
BK 15
RT 90
FD 15
LT 90
END

TO T
PD
FD 30
LT 90
FD 10
BK 20
RT 90
PU
BK 30
END

TO N
PD FD 30 RT 155 FD 33 LT 155 FD 30
BK 30 PU
END

TO H
```

```
PD FD 30
BK 15 RT 90 FD 15 LT 90 FD 15
BK 15 RT 180 FD 15 RT 180 PU
END

TO FINAL
HT CS SETBG 2 SETPC 1 PU HT LT 90 FD 80 RT 90 FD 20 PD T SKIP SKIP H SKIP SKIP
SKIP PU RT 90 FD 30 LT 90 PD SKIP E SKIP SKIP N SKIP SKIP D
SETCURSOR SE 0 0
END

?
```

APPENDIX H

SOFTWARE EVALUATION

APPENDIX H

SOFTWARE EVALUATION

1. Title, Publisher, Copyright Date:

2. Type
   Tutorial _____ Drill and Practice _____
   Game _____ Simulation _____
   Combination _____ Test/Diagnosis _____
   Administrative _____ Other _____

3. User
   Pre School _____ Elementary _____
   Jr. High _____ Sr. High _____
   College _____ Adult _____
   Comments: _____
   _____
   _____
   _____

---

4. Cost
   1. Initial cost of the program _____
   2. Replacement policy (yes) _____(no) _____
      Cost for replacement _____
   3. Hardware
      requirements: 32K _____48K _____64K _____
      Single drive_____Double drive_____
      Printer (yes) _____(no) _____
      Color (yes _____(no) _____
      Special Hardware Required:
      (yes) _____ (no) _____

COMMENTS: _____
_____

5. Does the program reach the target population for which it was designed? Yes _____ No _____ N/A _____

6. Are the instructions well organized, useful and easy to understand? Yes _____ No _____ N/A _____

7. Does the material require extensive preparation or training on the user's part? Yes _____ No _____ N/A _____

8. Does the program provide for user self-pacing? Yes _____ No _____ N/A _____

9. Is the content presented clearly? Yes _____ No _____ N/A _____

10. Is the program organized and presented in a sequential manner and in appropriate developmental steps? Yes ____ No ____ N/A _____

11. Can the user exit the program at any time? Yes ___ No ____ N/A ____

12. Does the user need typing skills to use the program? Yes _____ No _____ N/A _____

13. Can a student use the program without supervision? Yes _____ No _____ N/A _____

14. Is a printout of student performance available, if desired? Yes _____ No _____ N/A _____

15. Is the screen presentation pleasing to the eye? Yes _____ No _____ N/A _____

16. Does the speed of presentation match individual learning styles? Yes _____ No _____ N/A _____

17. Is the size of the print clear and well spaced? Yes _____ No _____ N/A _____

18. Are the use of graphics, sound, and color appropriate? Yes _____ No _____ N/A _____

Documentation

1. Does the material require the purchase of accompanying printed material? Yes _____ No _____ N/A _____

2. Does the material provide direct instruction? Yes _____ No _____ N/A _____

3. Is the material self-sufficient? Yes _____ No _____ N/A _____

4. Is the size of the print clear and well placed? Yes _____ No _____ N/A _____

5. Are the materials packaged so they can be easily and safely stored? Yes _____ No _____ N/A _____

6. Is there a glossary of terminology provided? Yes _____ No _____ N/A _____

7. Does the documentation contain a section on trouble-shooting? Yes _____ No _____ N/A _____

8. Can you use the program without constantly referring back to documentation? Yes _____ No _____ N/A _____

9. Is the documentation organized and presented in a sequential manner and in appropriate developmental steps? Yes _____ No _____ N/A _____

10. Does the publisher provide for a preview of the courseware? Yes _____ No _____ N/A _____

Content

1. Is the courseware simple to use ?

2. Is the courseware content accurate?

3. Are the courseware commands consistent?

4. Is the material appropriate for the age group?

5. Does the material provide a variety of built-in reinforcements? Yes _____ No _____ N/A _____

6. Does the content require previous learning or experiential background? Yes _____ No _____ N/A _____

7. Is the material presented on a meaningful and appropriate language level? Yes _____ No _____ N/A _____

8. Is the coursework free of sex bias and stereotyping? Yes _____ No _____ N/A _____

9. Does the program provide the user the opportunity for review? Yes _____ No _____ N/A _____

10. Can the user modify the instructional material? Yes _____ No _____ N/A _____

11. Is the software adaptable to different instructional strategies? Yes _____ No _____ N/A _____

12. Is the software compatible with your classroom presentation? Yes _____ No _____ N/A _____

13. Does the program contain a data management system (recordkeeping)?
Yes _____ No _____ N/A _____

14. Is the software student-proof? Yes _____ No _____ N/A _____

15. Does the program allow the student adequate time to complete learning segments? Yes _____ No _____ N/A _____

16. Is the program designed to alert the teacher to a student who is experiencing difficulty with the content? Yes _____
No _____ N/A _____

17. Is the content relevant to the instructional needs of the student?
Yes _____ No _____ N/A _____

18. Does the program work as publisher claims? Yes _____
No _____ N/A _____

EVALUATOR'S RECOMMENDATIONS:

ADDITIONAL COMMENTS:

EVALUATION SUMMARY

Please circle appropriate number with 5 being highest	
Performance	1 2 3 4 5
Ease of Use	1 2 3 4 5
Error Handling	1 2 3 4 5
Appropriateness	1 2 3 4 5
Documentation	1 2 3 4 5
Educational Value	1 2 3 4 5